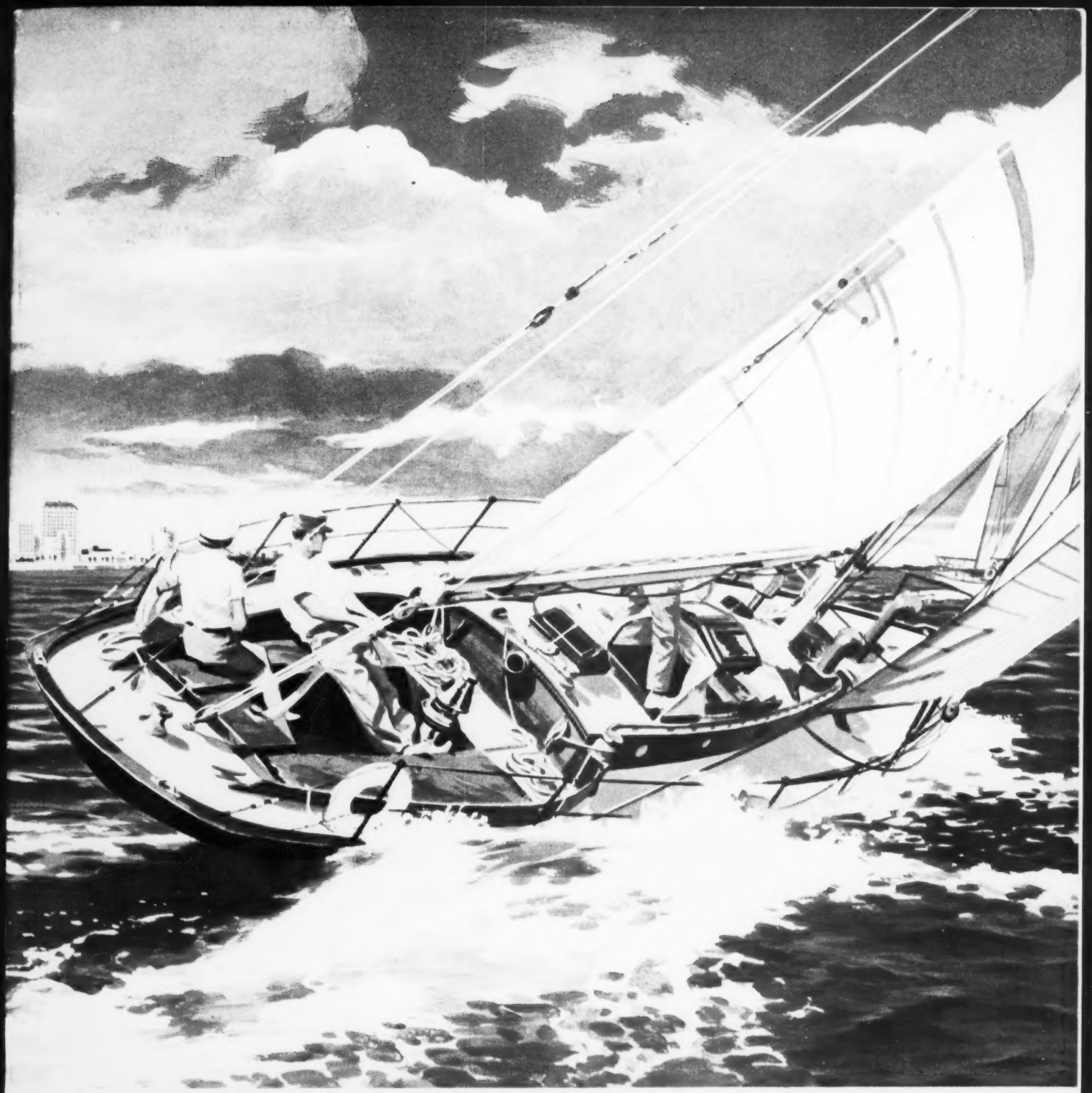
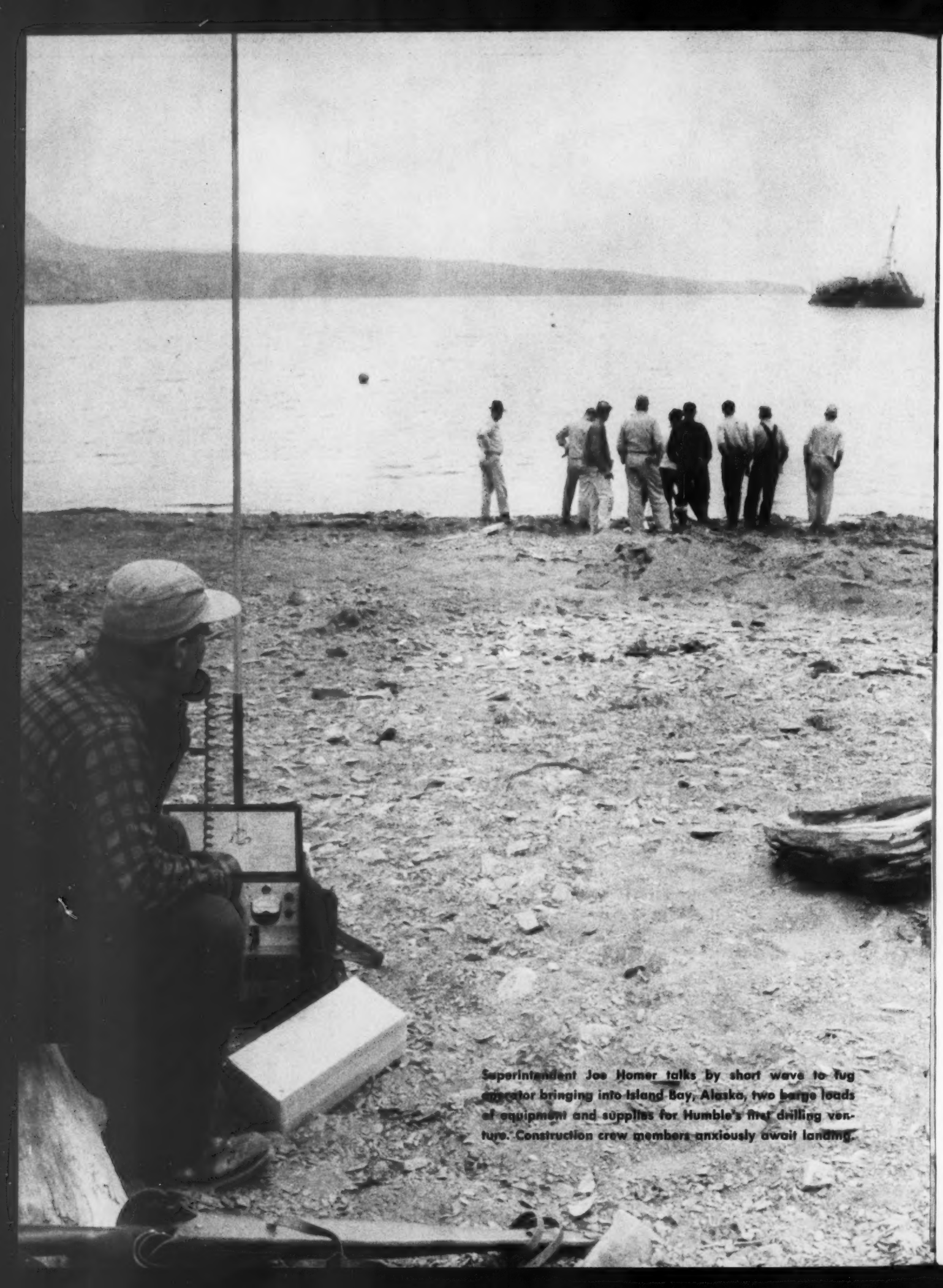


Sailing on Corpus Christi Bay — *Stanley Farnham*

The Humble Way

SEPTEMBER-OCTOBER, 1957

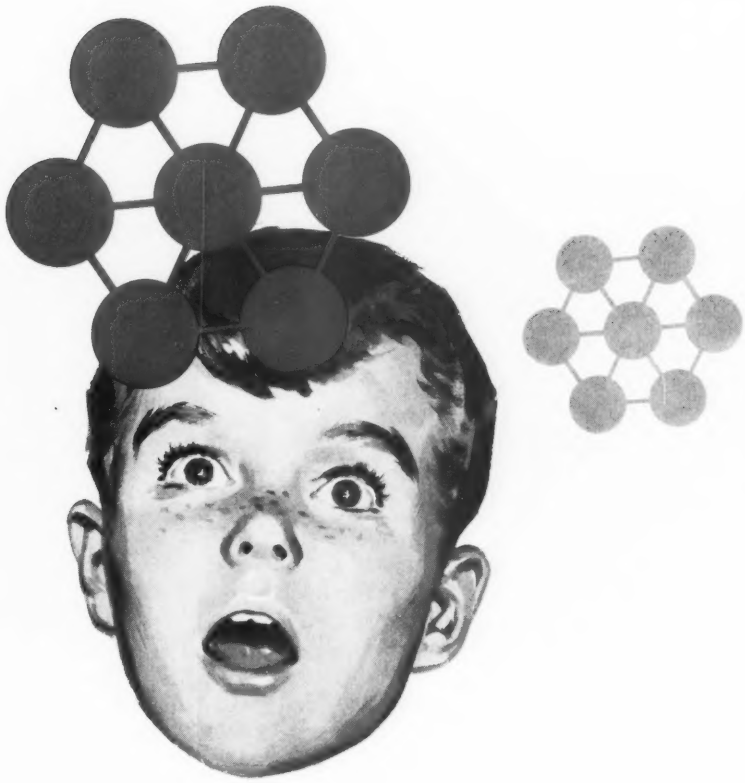


Superintendent Joe Homer talks by short wave to tug operator bringing into Island Bay, Alaska, two barge loads of equipment and supplies for Humble's first drilling venture. Construction crew members anxiously await landing.

The Humble Way

September-October, 1957

Vol. XIII No. 3



THE WONDROUS YEARS OF OUR TIME

MAN'S use of petroleum—of oil and natural gas—began before the first records of history.

But petroleum's full usefulness to man has been a matter of decades only.

They have been wondrous years, those decades. Years that saw automobiles built by the millions because gasoline was available as a cheap source of power. Years that saw the oceans dwindle under the high speed of great ships powered by oil. Years that saw the evolution of a more comfortable living in homes warmed by oil and natural gas. Years that saw rubber, fibers, paints and many other useful items of everyday living produced from petroleum's hydrocarbons. Years that saw the earth shrink under the wings of the airplane, and great wars decided by the availability of oil.

Thus, the oil industry has led the way into the wondrous years of our time. The industry, through foresight, ingenuity, research, and risk-taking, has found and produced the oil required in greater quantity each year, has conserved oil for the future, has devised the transportation systems that move oil economically, has built the refineries and plants that convert crude oil and natural gas to the hundreds of useful products needed by a growing United States.

The Humble Company, founded in 1917, has participated in petroleum's progress during four great decades, and has pioneered in the development of many current techniques for finding, producing, and refining oil. This month, with the industry, Humble invites you to consider the variety and extent of oil's progress . . . Surely no other industry has contributed more to the making of modern America.

First team of engineers and geologists to land near Alaskan drilling site saw mountains and valleys deeply blanketed in snow.

OPERATION ALASKA

IN the oil business, you don't choose drilling sites like you do sites for service stations. You have to go where the geologists believe oil is. If it appears there may be oil two miles deep under a hill in Alaska, that is where you go to drill for it.

And that's exactly where Humble is drilling its latest wildcat: on a windswept hilltop in an isolated area of southwestern Alaska.

It is the Humble-Shell Bear Creek No. 1. The site is in a lonely region near Kanatak (abandoned Indian fishing village) on the eastern shore of the Alaska Peninsula, 350 miles southwest of Anchorage. It is being drilled by Humble on a lease block held by Shell Oil Company and is a joint exploration venture of the two companies.

Why pick such a remote place to try and find oil? Are there good reasons for the choice? There are. Geologic reasons.

First, oil was discovered in Alaska in the early 1900's; second, prominent oil seepages have been observed in a number of places on the Alaska Peninsula and in other parts of Alaska; third, commercial oil has been produced, although not in large quantity. Between 1904 and 1931 total production in the Katalla area was approximately 150,000 barrels. However, these facts alone would not have prompted Humble to go so far afield in search of oil.

The Company's attention was attracted to Alaska by reports about surface geology and survey work done in Alaska by a university group in 1953. The following summer four Humble geologists made a reconnaissance trip by air over some of the more promising areas of Alaska's 586,000 square miles. This work was followed by more detailed work on the Alaska Peninsula during the past three summers and has been supplemented recently by the efforts of contract geophoto and geophysical crews.

When the results of these studies were put together with known oil facts, it appeared likely that Alaska might hold important oil reserves. That possibility was backed by Humble's management, and capital funds were appropriated for an exploratory venture.

Early in 1957 negotiations were begun between Humble and Shell Oil Company for a joint operation on the Shell-held acreage in the Kanatak area.

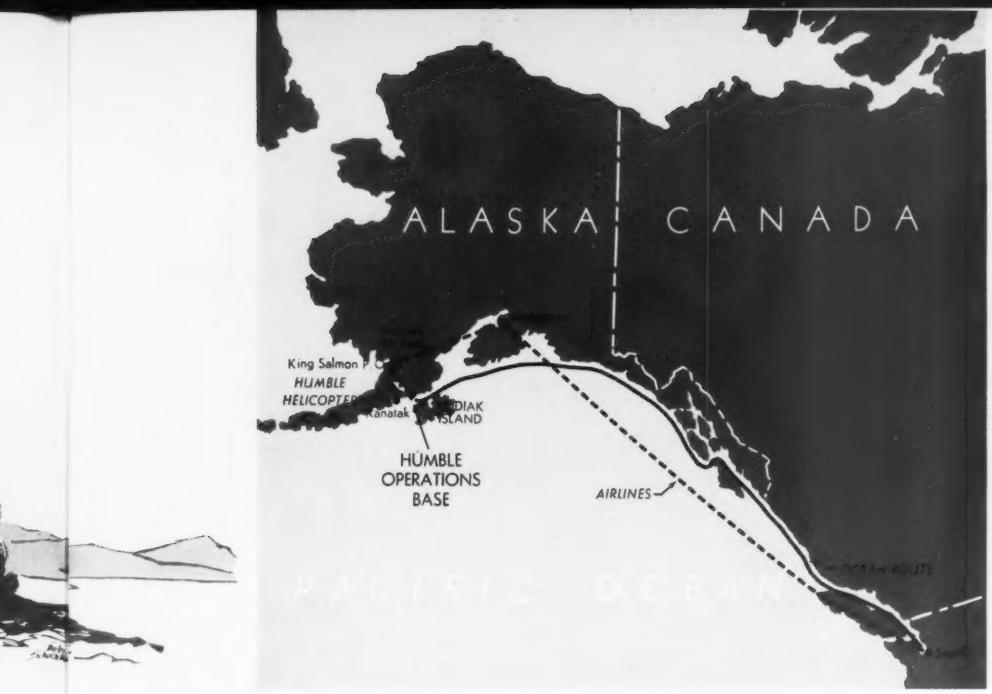
While negotiations were in progress a planning team of Humble production and exploration people (some of them men who had been named to supervise the project if it materialized) visited the frozen world of northwest Canada. Their purpose was to study equipment, drilling operations, and living conditions in extremely cold weather such as the proposed Alaska project might present.

When the agreement between Humble and Shell was completed in April, the same planning team, accompanied by geologists from both companies, flew to the Kanatak area. In a helicopter the party landed on a snow-covered hill and planted a flag on the site agreed upon by the geologists for the wildcat.

What this team saw on this first trip might well have dampened the pioneering spirit of hardened oil men. The site was on top of a 1,000-foot hill, flanked on the east by mountains reaching 2,000 feet. Across Bear Creek Valley to the west rose another chain of mountains of the same height. Not a tree was in sight; only a windblown shrub-like growth clinging close to the mountainsides.

The nearest community with commercial airline service was 90 miles away. Reconnaissance showed that there were no roads of any kind and no inhabitants; only bears, moose, caribou, wolves, and foxes knew this vast expanse of tundra, mountains, lakes, and streams.

As the men prepared to leave, they



Map of Alaska shows 2,500-mile sea and air routes from Seattle, Washington, to Humble base on the east coast of Alaska Peninsula.

Rank wildcat 4,000 miles from Houston is appreciably more expensive than normal well . . . in money, time, and materials

looked down on tiny Island Bay which leads out into Shelikof Strait. The small bay's choppy waves, pounding on a one-mile crescent of dark sandy beach, offered the only avenue for substantial traffic with the outside world. Here, somehow, without benefit of harbor facilities of any kind and in spite of 12-14 foot tides, supplies and equipment would have to be landed.

With this picture stamped on their minds members of the party returned to the States. Then began the difficult and detailed task of putting Operation Alaska down on paper—of drawing up the blueprint for a venture more than 4,000 airline miles from the Company's home office in Houston. This called for imagination, careful planning, infinite attention to detail. It called also for close cooperation between various departments and divisions of the Company—production, exploration, civil engineering, traffic, purchasing, aviation, and sales.

Difficult questions arose at every turn. How much and what kind of equipment was needed to establish a base and build a road to the site?

What kind of housing would be best in the cold, wet climate?

Without harbor facilities, how could the heavy machinery and drilling rig be brought in?

What type of rig was best suited for the job, and should Company personnel handle the operation or should contractors be engaged?

How best could food and fuel supplies be brought in and stored?

Should airplanes be used or helicopters for transporting personnel, mail, and day-to-day needs in to the base?

By late June most of the problems had been resolved and Operation Alaska was well underway. Two S-58 Sikorsky helicopters had been flown from Houston to Seattle, where they were knocked down and wrapped in heavy plastic for protection on a sea trip by freighter to Anchorage, Alaska. Then they were flown to King Salmon (Naknek Air Base) on the west coast of the Alaska Peninsula. From here they would ferry construction crew members, arriving ahead of the first shipments of materials, across 90 miles of uninhabited tundra.

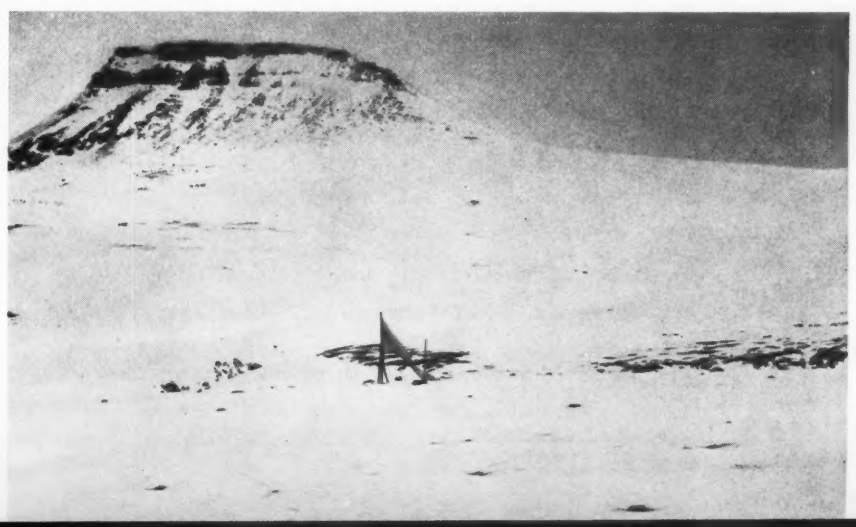
Meantime, supplies, materials, and equipment other than the drilling rig were arriving at dockside warehouses at the port of Seattle.

Contractors had been engaged for all major operations: one to build a base on the beach at Island Bay and from it to construct more than five miles of road to the drilling site; another to barge tons of materials and supplies over the 2500-mile route to the base; a third to pilot the two Company-owned helicopters over the desolate 90 miles between King Salmon and the base; still another to provide complete food and camp services for the crews; and finally one to drill the projected 12,000-foot wildcat.

To provide direction over this involved series of operations, a district office was established in Anchorage and staffed with experienced Company personnel: a district superintendent, a district petroleum and a district civil engineer, a district production geologist and an assistant, and a district chief clerk.

How well the plans for Operation Alaska were laid and carried out is shown in pictures on the following four pages.

Flag planted by the first party on a windswept hilltop marked the site chosen by geologists for the first wildcat well. Mountain peak in background rises some 1,000 feet above site.



Heavy plastic sheeting was carefully wrapped around all packaged materials in Seattle warehouses for protection against salt air on long barge trip. Foodstuffs, barreled fuels, packaged supplies, and other small items were palletized to expedite loading and unloading.

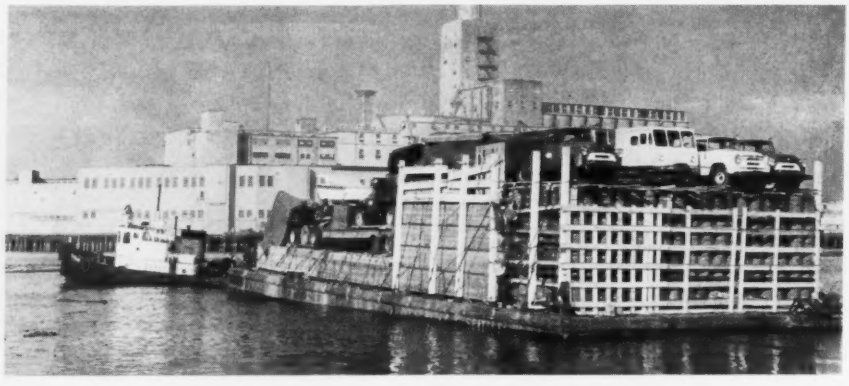
A Major Problem in Logistics

THE logistics of procuring, stockpiling, and loading for water transportation approximately 7,500 tons of necessities for the Alaskan project resembled a military project.

Seattle, Washington, was selected as the port from which shipments would make the coastwise trip of about 2,500 miles to the Humble base on little Island Bay. At Seattle, representatives of the Production and Purchasing departments, the Aviation division, and traffic bureau shared with representatives of various suppliers the double job of supervising the proper packaging and loading of materials and equipment and the selection of what should go first. Eleven barges, requiring five trips, brought to the remote base approximately 15 million pounds of materials.

Construction crews arrived at Island Bay ahead of the first barges and were ready to unload them promptly and to set about the task of building a base for themselves. Soon thereafter they tackled the job of carving out of the raw rocky hillsides and the mushy tundra more than five miles of road over which the heavy drilling equipment and derrick were to be hauled to the hilltop drilling site.

Road building equipment was positioned to allow early unloading from the first barge.



Loaded to capacity with food and housing, with motor equipment and road machinery—and fuel for the latter—first barge leaves Seattle for the 2,500-mile coastwise trip to Alaskan base.

First construction crew members carrying personal gear arrive by helicopter. Tents were set up by catering contractor and were home until the first barge brought comfortable housing.

Engineers anchor colored balloons at low tide to mark channel for entry of the barge.

First barge was brought in as near to shore as possible during high tide. At low tide, materials were hauled in across sandy bay floor.

Supplies were stacked on beach. Foothills show slope cause by tilted strata on flank of anticlinal structure where well is being drilled.

Insulated quonset huts were set up promptly at the beach camp for construction crew. Men gladly evacuated airy tents for warmer huts.

Road builders set to work and within six weeks hacked from rocky hillsides more than five miles of all-weather surface to drilling site.

TRAINING MEN AND TESTING EQUIPMENT

First aid training, safety lectures, and pointers on how to cope with fires and other hazards of the far north were given to contractors' crewmen in Odessa, Texas, in early July heat.

Engineers observe complete assembly of rig for Alaska well. After satisfactory tests, rig was torn down and shipped to Seattle for reloading on a barge for trip to Alaska.

WHILE the vast array of equipment and supplies for the Alaskan project was being accumulated, contractors' crews were trained in West Texas and the drilling rig was assembled and tested in California.

Two separate groups—32 members of the advance construction crew and 16 members of the drilling crew—took the Humble training course. The setting was the most unlikely of places for training in arctic living: Odessa in sun-baked West Texas.

For three days early in July, while the mercury outside hovered around the 100-mark, sport-shirted construction crew members studied ways of coping with hazards of the far north. They underwent intensive instruction in first aid and emergency medical care; they heard pointers on safety; they even got in some practice at fire fighting.

The tundra trainees were especially curious about wildlife in the area. "There are no snakes," reported a Humble man with Alaska experience, "but there are some bears about as big as you'll ever want to see." Are they dangerous? "The Kodiak bear," came the answer, "is supposed to be as afraid of you as you are of him, but my advice to you is to leave the bears alone."

At about the same time the training course was in progress, Humble engineers who would supervise the Alaskan project were at Torrance, California, observing the assembly of the new drilling rig. Every pump and power unit, every piece of equipment down to the last nut and bolt was rigged up and tested. When all concerned were satisfied that all units were properly designed and fitted, the rig was torn down and shipped by rail to Seattle. Here it was prepared for shipment to Alaska aboard a single large barge.

SET FOR WINTER

THE last four of 11 supply barges, including the one bringing the drilling rig, arrived at Island Bay during the latter half of September. By then the construction crew and the drilling crew (early September arrivals) shared the waterfront camp in comparative comfort.

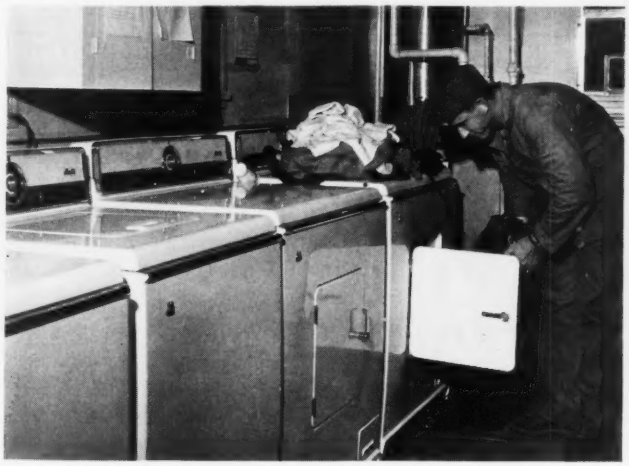
The small army of approximately 60 men was housed in warm huts; hearty, well-prepared meals were being served; and there existed a camaraderie that comes when men work, eat, sleep, and relax at close quarters.

Constant winds and almost constant rains made working in the open something less than ideal, but everyone was looking forward: the construction crew to finishing their work and heading homeward; the drilling crew to getting the rig unloaded and set up to drill.

The work load remained heavy. There was a compelling schedule facing the group. All were anxious to get the well started and to complete the hilltop camp where the crew would live near the well. When all this was done by October 1, there was a feeling of being "all set for the winter." (Editor's Note: The well was spudded in on September 23.)

Comfortable camp housed construction crew, also drilling crew which arrived ahead rig aboard barge (upper right). Trailers (lower right) will house drilling crew near well site.

Movie night finds crewmen flocking to helicopter-hangar-turned-theater for camp's main source of entertainment. The show bill includes full length movie features and training films.



Laundry gets personal touch in camp. Automatic washers and driers are available, and each man does his own how and when he likes it.

Substantial food is what hard working men need, and they get it in the Humble camp. Here chef prepares individual salads for dinner.

O. Q. Lomax Retires

O. Q. Lomax

O. Q. LOMAX, pipeline pioneer who assisted in the design and construction plans for Humble's first major pipeline project in 1919, resigned as president of Humble Pipe Line Company September 1 preparatory to his retirement on October 1.

He was the fourth chief executive in the Company's 38-year history and completed 34 years of distinguished service.

Mr. Lomax is a native Midwesterner who has lived in Texas most of his life. He attended Kansas State University and in 1917 took his first job in the oil industry as a refinery engineer with Empire Gas and Fuel Company. In December, 1918, he joined Humble Oil & Refining Company.

One of his first jobs was assisting with preliminary field surveys and planning for Baytown Refinery. The refinery site at that time was little more than swampy rice land dotted with dogwood groves.

In the spring of 1919, Mr. Lomax transferred to Humble Pipe Line Company as engineer-draftsman.

That same year he worked on the plans for the Company's first major pipeline project, an eight-inch line from the booming Ranger area to Texas City, with lateral lines from West Columbia to Webster and from Webster to Texas City.

Mr. Lomax worked for other oil firms and construction contractors between 1919 and 1924, when he returned to Humble Pipe Line Company. Since returning, he has had offices in Houston. However, during World War II, he went to Washington, D. C., many times to help with wartime transportation problems.

In the years between 1924 and 1937, he served as engineer-draftsman, design draftsman, chief draftsman, assistant chief engineer, and acting chief engineer.

Mr. Lomax was appointed Southern Division superintendent in 1937. Six months later he became assistant general superintendent and served in this position until 1942, when he was elected to the Humble Pipe Line Company board of directors and made vice president and general superintendent. Eight years later he became president of the Company.

He is a member of the Presbyterian Church, Houston Engineering and Scientific Society, and Sons of the American Revolution.

William S. Spangler

Spangler and P

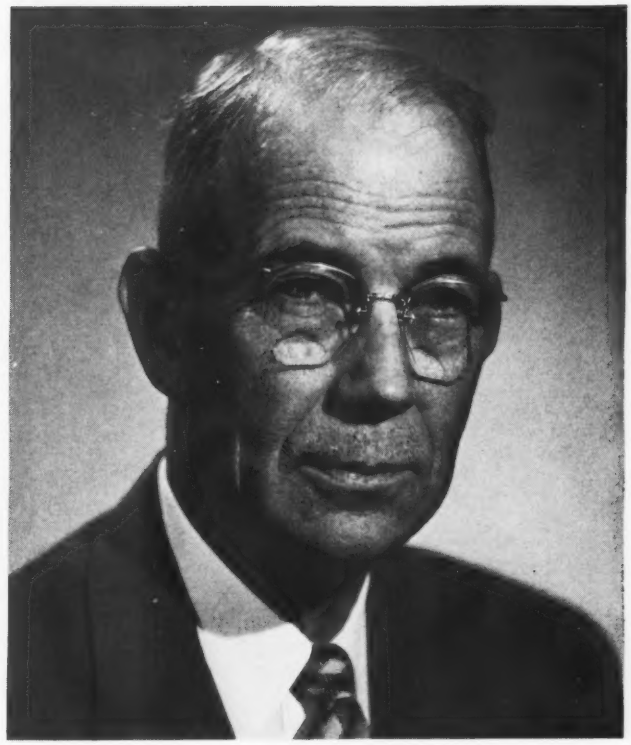
WILLIAM S. SPANGLER, general superintendent, and P. D. Phillips, Jr., assistant general superintendent, have been promoted to higher positions within the Humble Pipe Line Company.

Mr. Spangler is now vice president of the Company; Mr. Phillips is a director and general superintendent.

The new vice president is a native of Pittsburgh and graduated from Carnegie Institute of Technology in 1933. In that year he went to work for Humble as a pipeliner in the East Texas Division.

In 1935 he was assigned to the Houston engineering office and was office engineer in 1946 when he was promoted to assistant division superintendent for the Southern Division.

A. E. PECORE NEW PIPE LINE PRESIDENT



A. E. PECORE

A. E. PECORE, who succeeds Mr. Lomax as Humble Pipe Line Company president, is a veteran of 38 years service.

He began his career with the Company in 1919 as a draftsman immediately after being discharged from the army. In 1924 he was made chief draftsman and in 1934, assistant civil engineer. He became assistant chief engineer in 1937 and seven years later was appointed chief engineer.

While attending the Sixteenth Advanced Management Program at Harvard in 1949, Mr. Pecore was notified that he had been promoted to general superintendent of Humble Pipe Line Company. He became vice president in 1950.

The Company's new president is a native Houstonian. In fact, he is the son of a family whose earlier members were among the first to settle in the Bayou City in the early 1830's.

After attending Houston schools and working for a while as a clerk for Southern Pacific Railroad, Mr. Pecore joined the engineering department of Producer's Oil Company, now The Texas Company.

When hostilities began in World War I, he enlisted as an army private and spent 11 months overseas with the 109th Engineers, 34th Division. He was engaged principally with hospital construction near Nevers, France.

Mr. Pecore is a charter member of St. Stephens Episcopal Church and belongs to the American Petroleum Institute, Pipe Liners Club, and the Mid-Continent Oil & Gas Association.

ND PHILLIPS PROMOTED

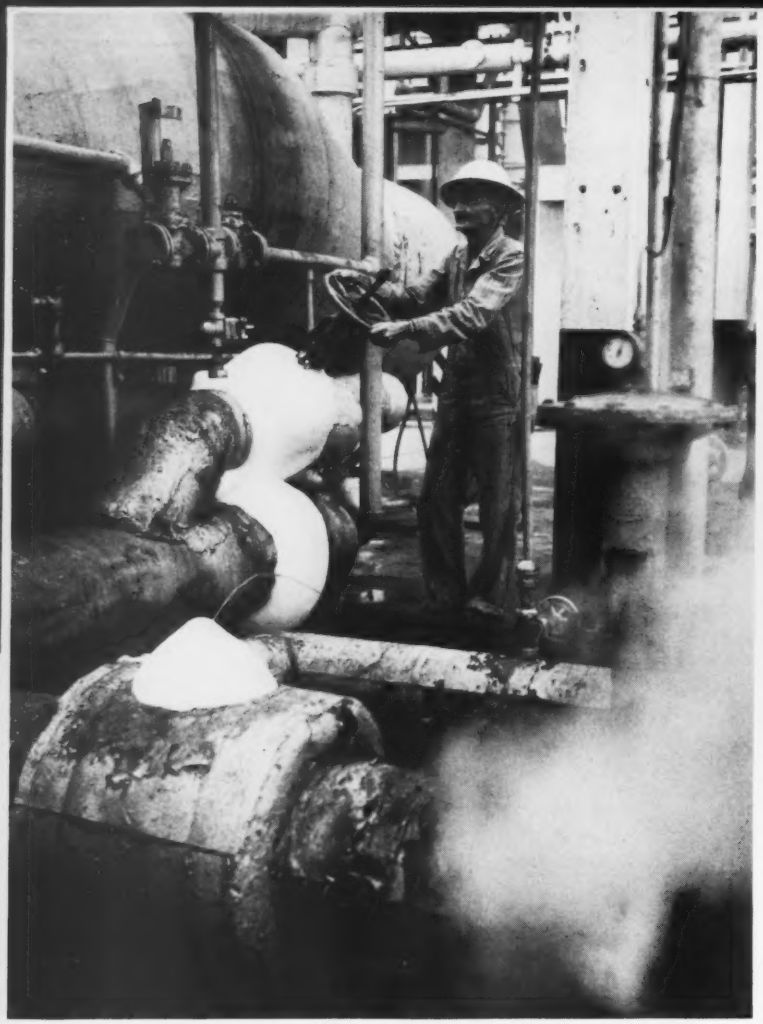
Mr. Spangler has been general superintendent of the Company since 1951 and was appointed a director in 1955.

Mr. Phillips is a native of Cleburne, Texas, and graduated from Texas A&M College in 1934. Several months after graduation he went to work as a pipeliner for the Company at Longview. He was transferred in 1937 to the West Texas Division as a field engineer.

He served in the army from 1942 to 1946 and was a lieutenant colonel in the Corps of Engineers at the time of discharge.

Three years later Mr. Phillips was named assistant chief engineer of Humble Pipe Line Company and became chief engineer in 1951. He was promoted to assistant general superintendent in January, 1956.

P. D. PHILLIPS, JR.



Ice forms on uninsulated equipment at Butyl rubber plant. Temperature at which the reaction occurs to form Butyl is below —100° F.

Snow-like crystals of paraxylene, just scooped from polymerization unit, will be further processed, used in manufacture of fabrics.

The Wonderful

Bathtubs to baby bottles, tires to toothpaste, chemicals from oil are revolutionizing our daily lives

THE old banter about the traveling salesman who was persuasive enough to sell an icebox to an Eskimo lost its punch long ago. But now something new has been added.

Glib merchandisers these days are selling *igloos* to Eskimos. These Arctic apartments are made not of ice, but of white foam plastic blocks and are ten times better than the old fashioned models.

And there are good indications that these same commercial travelers who have trod the tundra also are making their mark closer to home. At dressing tables across the nation, well-groomed women are winning new hand beauty from do-it-yourself plastic finger nail kits. They simply add a splash of water to a powder and presto! The result is an artificial, bite-proof nail that looks as good as the ones nature provides.

This trend to the synthetics has even taken to the air. An experimental plane has been developed with inflatable wings and fuselage of treated nylon that can be pumped up like a life preserver and flown like the more conventional craft.

These are only a few of the exciting new ways that the oil-based compounds known as petrochemicals are leaving their brand on our civilization. Thousands of things we need and use in our daily living are being added to a growing list labeled "made from petrochemicals."

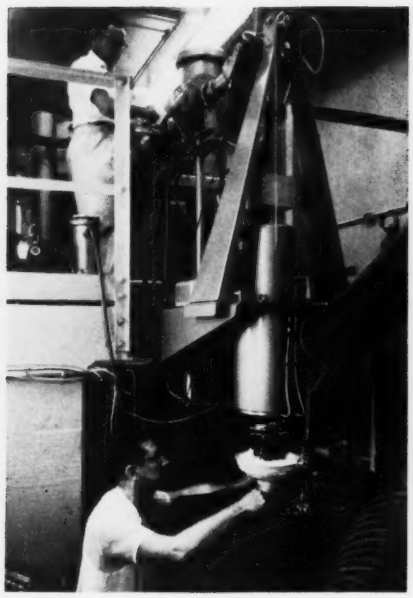
They range from billiard balls to baby bottles, from toothbrushes to TNT, soil conditioners to sulfa drugs, vitamins to insecticides, sausage skins to seat covers.

Petrochemicals may be in the hat on your head, the clothes on your back, the soles on your shoes, or the fillings in your teeth. They may be used in the manufacture of your stoves, refrigerators, record players, dishes, telephones, golf clubs, lamp shades, boats, bubble gum, toys, teething rings, or coffins.

Not even listed in the dictionary seven years ago, petrochemicals today comprise some of the most useful and versatile products serving mankind.

Humble has more than kept pace in the field's tremendous expansion in recent years. In fact, petrochemicals today represent a significant percentage—saleswise—of the Company's entire operations.

On the national scene, also, Humble's progress in the field has made its mark. In 1956 Baytown Refinery units produced approximately three per cent of all petrochemical raw materials in



Van de Graaff Accelerator produces radiant energy, aids in petrochemical research.

Like golden bread dough, hot Butyl rubber comes through rollers of finishing mill at Baytown Refinery. From here it is cut into strips, boxed, and shipped to various manufacturers.

World of PETROCHEMICALS

the United States, including about twelve per cent of America's synthetic rubber or raw material therefor.

And new expansion — construction of new units and remodeling of old ones—is constantly moving forward at a brisk clip.

Going into operation in December at Baytown, for example, will be one of the world's largest benzene plants with a capacity of about 80,000 gallons daily. Customers will use the basic chemical raw material coming from this unit for the production of styrene —a colorless liquid utilized in the manufacture of plastics and synthetic rubber.

An Ethylene Unit, scheduled for completion by mid-1958, will turn out 80,000,000 pounds of ethylene a year. This chemical is the starting point of polyethylene, of squeeze bottle fame; ethylene glycol, for antifreeze; ethyl alcohol for industrial solvents and rayon; and styrene.

Humble's new Cat Cracker No. 3, now under construction, will aid indirectly in this expansion program by stepping up the production of by-product gases vital to the production of petrochemicals.

Recently, 80 acres of land were set aside just across from the Hydroformer Unit and earmarked as a Specialty Area for future construction of other new units.

Butadiene Unit, Butyl Unit, Paraxylene Unit, and other older units are being expanded this year and next to increase output.

Everywhere you look on the refinery's horizon these days, towers, tanks, tubes, and spheres are being built or remodeled to turn out the raw materials for plastics, synthetic fibers, synthetic rubber, detergents, antifreeze, paints, and dozens of other petrochemical products.

Humble's venture in this amazing field began in 1940. It was then that the Company produced its first petrochemical—toluene—at the Baytown Ordnance Works, built and run for the government during World War II. This powerful compound ended up as the final "T" in TNT. During the war years more than one-half of the TNT for America's bombs was made from toluene produced at this unit.

The next step in petrochemicals

In Baytown's chemical research labs, dozens of new compounds are being discovered.

Silvery Butadiene Plant produces basic raw material for GR-S synthetic rubber.

New Butadiene Plant tower is part of big expansion program going forward at refinery.

came about a year later—this time to help meet the wartime demand for synthetic rubber to replace natural supplies cut off by the enemy. Humble arranged for the design and construction and operated two of the several government plants around the country to manufacture Butyl and butadiene for GR-S synthetic rubber for the country's war machine.

But the real boom in petrochemicals —not only for Humble, but for plants all over the country—came in the post-war period.

The Baytown Ordnance Works, which made toluene, was purchased in 1946 from the government, converted, and renamed the Hydroformer Unit, Naphtha Rerun Unit, and Extraction Unit. Today, these facilities produce aromatics and solvents for paints, varnishes . . . as well as components for motor fuels.

A paraxylene unit completed in 1953 made Baytown Refinery a producer of the main ingredient of a widely-used synthetic fiber.

Other units already in use for normal refinery fuel and lubricant production were altered and expanded in rapid succession to turn out such basic petrochemical raw materials as tetrapropylene, tripropylene, cyclohexane, propylene concentrate.

Refinery by-products—mostly gas—which previously were considered as fuel were suddenly being converted into valuable chemicals. In a short time, there were few basic refining units which did not contribute in some way to Baytown's petrochemical program.

In 1955, Humble purchased the two rubber plants from the government for about $26 million.

Today, there are 10 commercial petrochemicals produced at the refinery—ranging from heavy, black aromatic tars to light, colorless paraxylene. The bulk of Humble's petrochemical business right now, however, is with Butyl rubber and butadiene for GR-S rubber (formerly called Buna). Saleswise, these two materials comprise over half of Humble's current petrochemical business.

Butadiene, the principal ingredient of GR-S rubber, can be produced at Baytown at the rate of 65,000 short tons a year. From that volume of liquefied gas can be produced enough raw rubber to manufacture about 20,000,000 automobile tires.

Butyl rubber follows closely in production figures with 44,500 long tons a year. Butyl is primarily known as the innertube rubber, but it is now finding increasing uses in such things as gaskets, shock absorbers, water-proof seals, garden hose, tennis balls, and insulation. Late model automobiles are equipped with parts containing as much as 14 pounds of Butyl rubber, exclusive of tires and tubes.

Paraxylene is Baytown's third most important petrochemical. Annual production of 40,000,000 pounds is used in the manufacture of a synthetic fiber convertible to wearing apparel and packaging and photographic film.

Millions of housewives can thank another odd-sounding petrochemical, also produced at Baytown, for the billowy suds in their dishpans. Tetrapropylene, as the compound is called, is used almost exclusively in the manufacture of synthetic detergents, which now comprise about 60 per cent of the total U.S. detergent and soap business.

Other less significant, but still important petrochemicals coming from the refinery include tripropylene, used in the manufacture of plastics; cyclohexane, used to make nylon; butylene and propylene concentrates, for lacquers, plastics, paint, rayon, gasoline additives, and acetone; sulphur, for sulphuric acid; and aromatic tars, used to make carbon black for inks and synthetic tires.

Almost every American uses at least one of these compounds in his or her everyday living. Yet, probably few understand what petrochemicals are, much less how they are made.

The secret of petrochemistry lies in combining or re-arranging the molecules of refinery and other petroleum gases—primarily butane, propane, ethylene, propylene, and butylene—and of liquid components of crude oil to make an apparently unending variety of chemicals. Humble chemists

Synthetic fabrics are becoming increasingly popular due to good looks, wearing quality.

accomplish this just as a baker mixes sugar, eggs, flour, salt, and other ingredients to make a variety of breads and cakes.

The operation is tied up in four words: *separation,* by which various petroleum components in crude oil are separated from each other; *cracking,* which breaks these components into simpler materials, including gases to be used as building blocks; *synthesis,* which converts these materials into basic, simple chemicals; and *polymerization,* one type of synthesis, which combines these simple chemical building blocks to form chains, linking simple molecules into large, complex molecules called polymers.

It is these polymers that comprise the heart of modern petrochemistry. How are they made? No one knows for sure. Despite various theories on how the hydrocarbons rearrange themselves, polymers remain something of a mystery even to the people who know them best.

One scientist frankly admitted that sometimes "we're not sure what happens or why in the production of polymers."

Humble chemists create them by mixing various refinery gases with a catalyst, a substance which causes changes without changing itself. Under such exposure the hydrocarbon molecules in the gases join with themselves to form new super molecules.

Some polymers are hard, translucent, transparent, or perhaps pliable and we know them as plastics. Some are elastic and bounce and they are called synthetic rubber. Those that can be woven into fabrics are called nylon, Dacron, Acrilon, Orlon, etc. Your plastic pencil, drinking glass, auto tires, and Christmas tree decorations may all be made from polymers obtained by this intricate process of molecule juggling.

Today, 150 companies (50 of which are oil companies) turn out more than 3,000 petrochemical products totaling 35 billion pounds a year. Total dollar value is $4.2 billion a year. Total investment is $4.3 billion.

Most of this expansion is taking place in the South and particularly in the Texas and Louisiana Gulf Coast area. In the 600-mile crescent between Baton Rouge, Louisiana, and Brownsville, Texas, are located three-fourths of the petrochemical plants in the United States. This centralization is due to great petroleum reserves in the area, as well as refining facilities, plentiful labor supply, and desirable weather.

Petrochemistry, indeed, has come a long way . . . and fast!

Petrochemicals in the Future

The future of petrochemistry promises to be even brighter than its illustrious past. Research scientists are already working on a stunning array of entirely new polymers. Each year some 10,000 brand-new compounds are developed.

It is impossible to say exactly where research will lead these men, for as one observer put it: "If they knew where they were going, they would already be there."

The current research trends of petrochemists, however, are to concentrate in general areas of greatest potential. Humble scientists, for example, are vitally interested in the family of aromatics—benzene, toluene, xylenes—so named because of their pungency.

In various experiments, an effort is being made to make intermediates from these raw chemical compounds and particularly to oxidize them to give corresponding acids. To aid in their program a new pilot unit now is being constructed to study oxidation of hydrocarbons.

Modern automobiles depend on petrochemicals for such things as tires, tubes, paint, antifreeze, solvents, upholstery, gaskets, body parts.

Petrochemicals are seen everywhere in the modern home. Products made from synthetics include rugs, upholstery, lamps, and furniture.

Insecticides, fertilizers, and soil conditioners, along with tractor accessories, fuel and lubricant additives are only a few of the many petrochemical products helping America's farmers and ranchers raise our standards of living through more and better agricultural products.

Humble petrochemists are even exploring the use of nuclear energy to aid in developing and perfecting new petrochemical compounds, and producing known compounds in a different manner.

In one of the more unusual of such experiments at Baytown, chemists have converted ethylene, a refinery gas, to polyethylene, a plastic. This was accomplished by high energy radiation from a Van de Graaff Accelerator, a machine which produces small quantities of radiant energy.

Humble scientists have come up with many new polymers in recent years, but only a few have been found to have a commercial value.

With American ingenuity at work in this fabulous field in the years ahead, virtually nothing is impossible. You may move your family into an all-plastic house before too many years. You may already be wearing a suit that can be tossed into a washing machine and worn without pressing. Non-woven paper-like synthetic fabrics may lead to disposable clothing—like a pair of work trousers or doctors' and nurses' uniforms. Starving populations may turn to petrochemicals for nourishment. In fact, the food-from-oil trend is already here. Flavoring, extracts, vitamins, glycerin, synthetic butter, lard, and fatty acids—all are now being made from petrochemicals. Man needs eight amino acids for life and all can be synthesized now from oil—and if necessary, mass produced. The resulting pill may not be as palatable as a sirloin steak, but will contain about the same nutritional value.

According to one estimate, 400 entirely new uses for petroleum chemicals are being found every year.

Where will the frontiers of petrochemistry stop? No one knows for sure and only the adventurous will guess. As an official of one of America's largest corporations recently summed it up:

"In the petrochemical industry, nothing we can predict today will be sweeping enough to live up to the facts when they develop in the near tomorrow."

Novel Uses for Synthetics

Surgeons are discovering increasing uses for synthetic arteries made of nylon.

For years you have been eating petrochemicals—in vitamin pills; sleeping on them—nylon bed sheets; and talking through them—telephones. If current research proves fruitful, you also may soon be putting them in your pocket on pay day. Nylon currency is being developed that supposedly will last much longer than paper greenbacks.

Farmers and ranchers need not want any longer for grain storage space. Plastic and nylon balloons can now be inflated in seconds to solve any emergency.

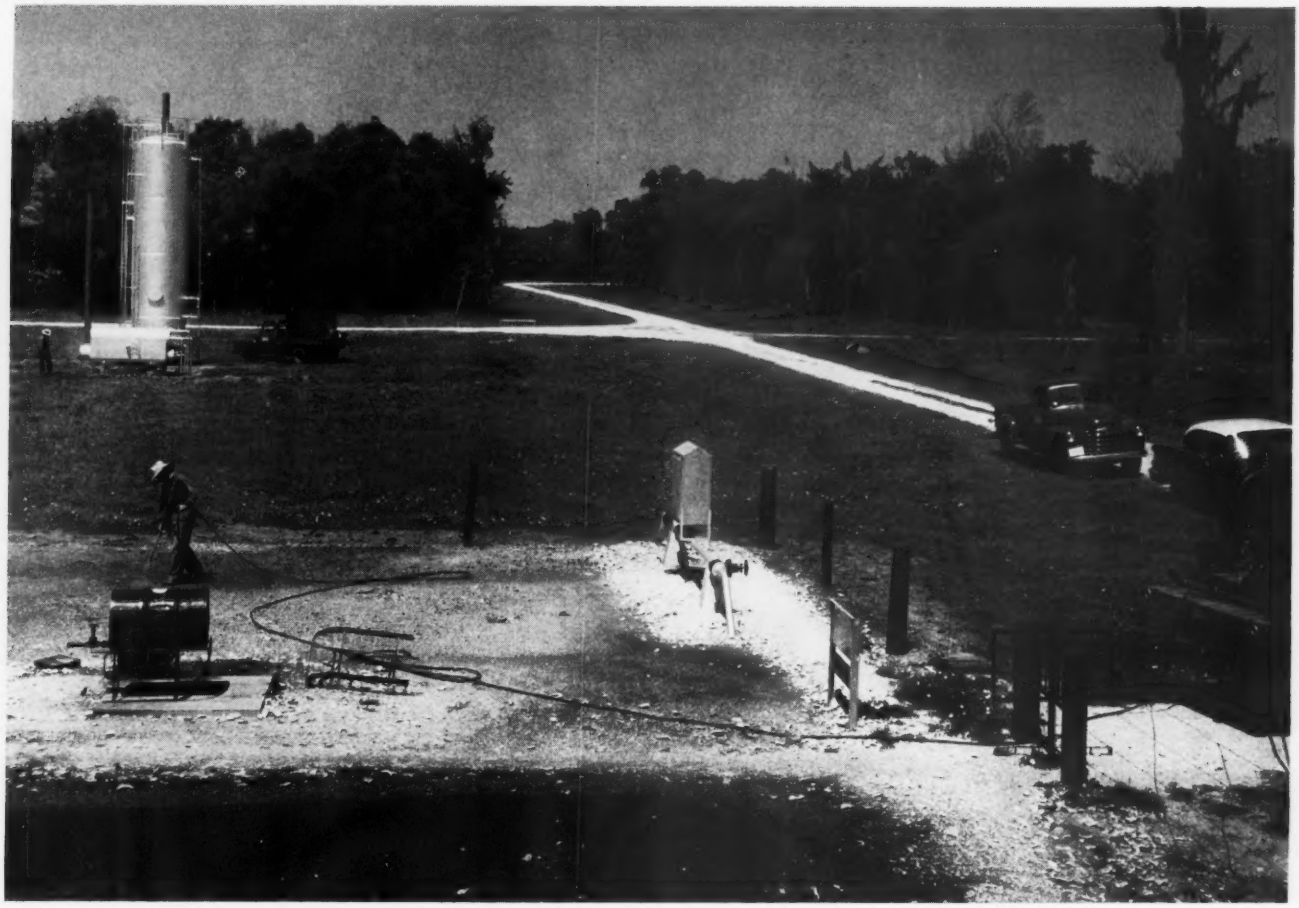
If you are ever injured, you may be given a transfusion of synthetic blood plasma.

Hundreds of heart disease victims have been saved with new synthetic blood vessels. Knitted nylon arteries are helping many disabled persons resume normal lives.

Medical research scientists are now working on the development of new synthetic organs for the human body —kidneys, gallbladders, even complete digestive tracts.

One rather unique adaptation of petrochemicals comes from Portugal. Resourceful citizens are reported to be spraying big nylon balloons with concrete and using them as wine vats.

Everywhere you look, the wonderful world of petrochemicals is astounding even its fondest admirers.



Spraying weed-killing chemical at field installation, contract crew controls coverage by means of regulated nozzles. Such areas were once cleared by expensive and time-consuming hand labor, but new chemical control is faster and cheaper and inhibits weed growth.

WAR ON WEEDS

Humble uses new chemical spray to clear areas around oil field equipment

UNTIL a few years ago, the task of weed control around tank batteries and other equipment in the field was a slow and costly business for the Production Department. More than that, it kept crews away from more important jobs and meant substantial expenditures for contract labor.

About three years ago, Humble began looking for a cheaper and more efficient way to win the war against weeds. First, Company engineers, in collaboration with an industrial hygienist from the Medical Division, began to experiment with several weed killing chemicals then on the market. After considerable study and many tests, one chemical proved to be suitable. It was non-corrosive, non-toxic, non-explosive, and contained no hormones harmful to plant or animal life.

During the past three years, this chemical has proved to be exactly what Humble was looking for. It cut maintenance costs many thousands of dollars on the acres where engineers experimented; recent results indicate its use will save money in all areas. Based on a 20-year program, chemical weed control will reduce hand-cutting expenses by 66 per cent, engineers estimate.

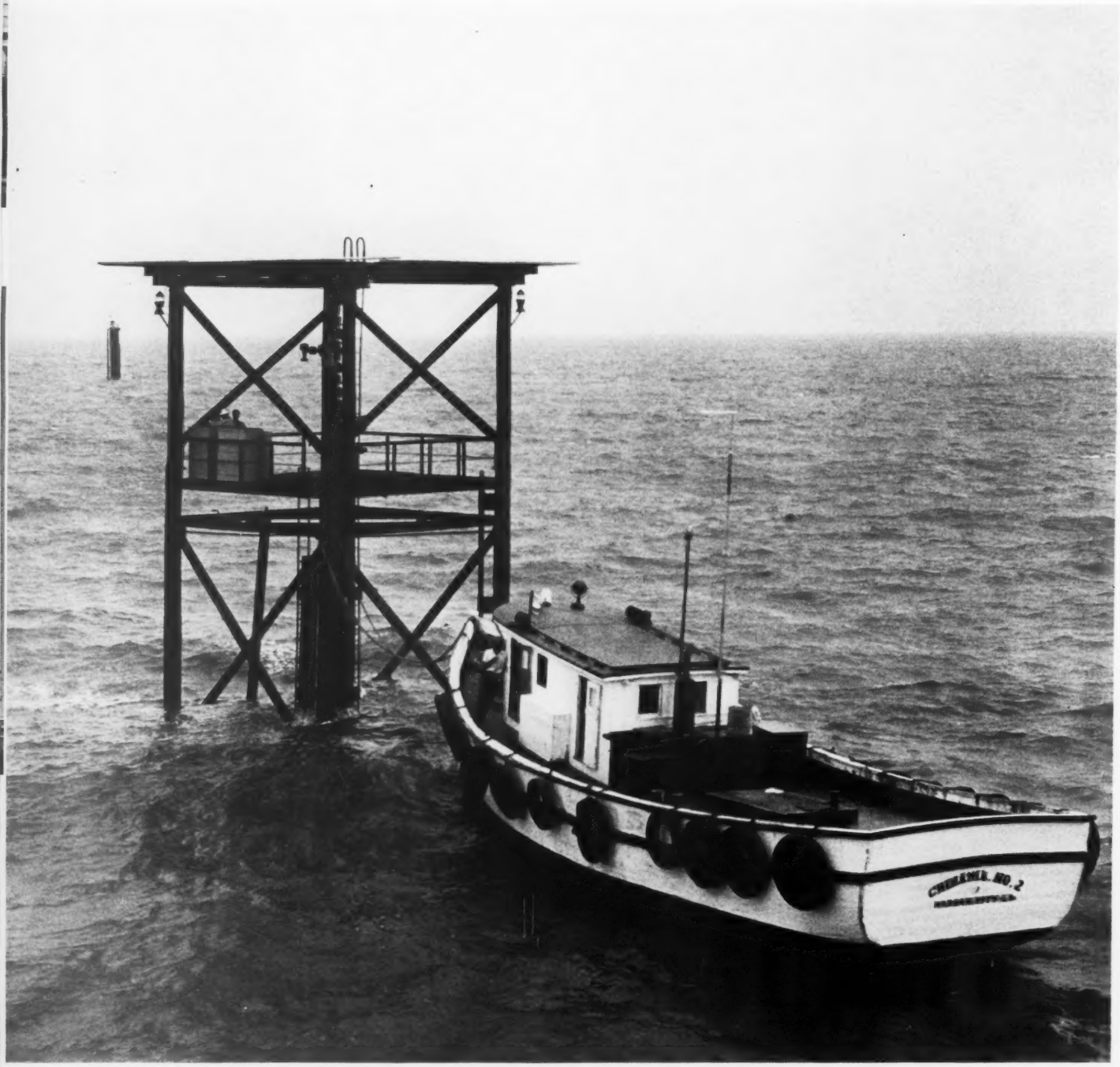
The chemical is harmless to men and animals, and may be handled freely. Livestock can graze safely in areas where spraying is going on. Acting as a soil sterilizer, the chemical is sprayed on so precisely with a special nozzle that contract workers can predict within inches just how much vegetation will be cleared. Grass and weeds can be killed inside a fence line and left growing right up to the fence on the outside. Those who think all chemicals are toxic are surprised to see crews spraying one side of the fence and cattle grazing on the other.

Another member of this chemical family that kills without malice controls brush growth without destroying desirable grasses. Still another controls floating vegetation in Company waterways.

"These chemicals offer the most economical and effective method of weed control we've found," said one who has worked with them.

To protect and service exposed wells in the Gulf of Mexico after drilling rig is removed, Humble now uses small but practical type of

Offshore



New-type wellguard and offshore workover platform gets finishing touches put on as Humble electricians adjust navigation lights and fog horn. In background is old-type wellguard, a 6-foot-diameter caisson which protects well; but workover has to be done from boats. New platform is accessible by helicopter, which can land on upper deck, and by boat tied alongside. Railing on platform offers maximum safety.

e Workover Platform

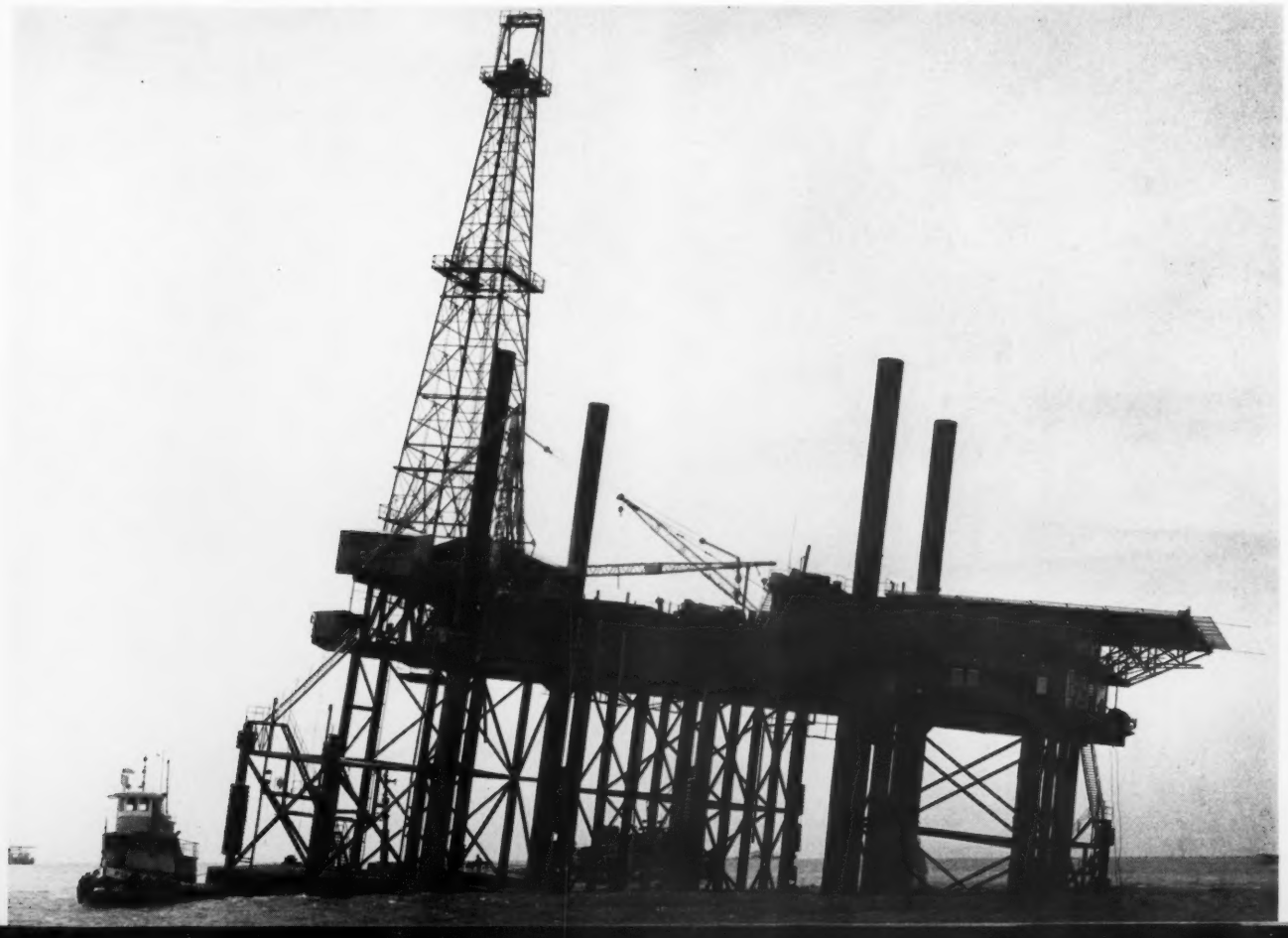
ONE of the problems in offshore oil operations is protecting the wellhead and casing from wave action and marine craft. Until recently, Humble's method was to slip metal pipes, six feet in diameter, over the wellhead and casing and anchor it in the Gulf of Mexico off the Louisiana coast. Equipped with a blinking light and fog horn as aids to navigation, these caissons give adequate protection. However, they offer no workover platform for crews and all servicing has to be done from boats.

To overcome this disadvantage, Humble engineers designed a steel work platform which offers access to the well both by helicopter and boat. Prefabricated in New Orleans, the 20-foot square, two-level protective shield is hauled to the well site and placed in position by the Company's giant crane barge, the DB-1.

The lower level is a four-legged base of steel pipe used to guide four pilings into the Gulf's floor, anchoring the template base. The second level, a helicopter landing platform, is placed on top of the pilings and welded to the base, completely protecting the wellhead and casing which jut 19 feet above water level. Navigation lights on each corner and a fog horn warn oncoming boats of the well's presence, and the template serves as a wave breaker and protects the casing from debris and marine craft both above and below water level.

The top deck serves as a helicopter landing platform; the second deck is a service or workover level. With this arrangement a helicopter or boat can drop personnel off at the well site and pick them up when the job is done. When working on the caisson-type shield, boats had to tie alongside and stand by while work was going on. This meant wasted time for a boat and crew just to stand by when they could be on another job.

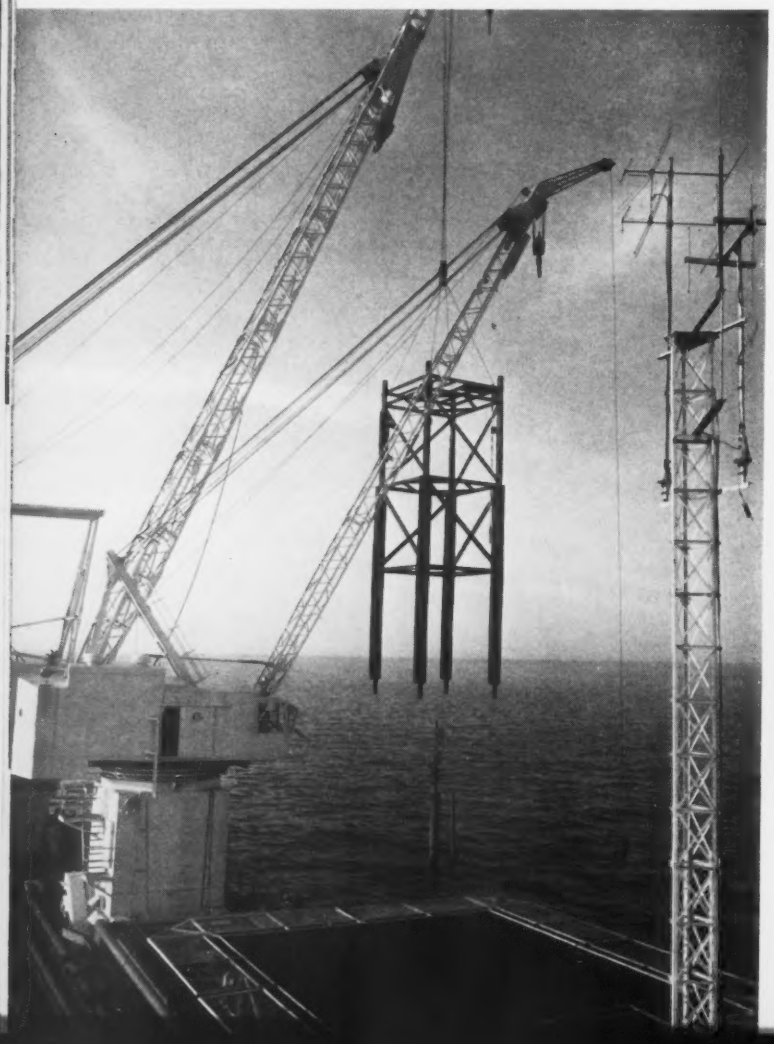
Removing rig from completed well before installing wellguard, three tugboats pull partially submerged mobile platform from well site. Rig sits at odd angle because ballast was pumped from end nearest well as a safety measure. Actually, the barge had to be slid from well site because one end was stuck in the mud.

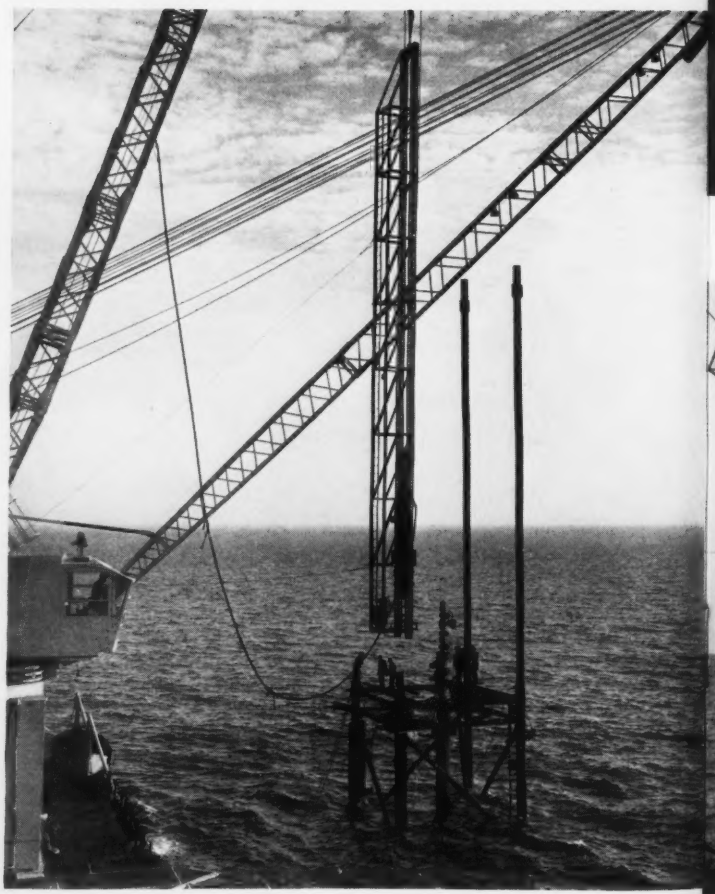


Offshore Workover Platform (CONTINUED)

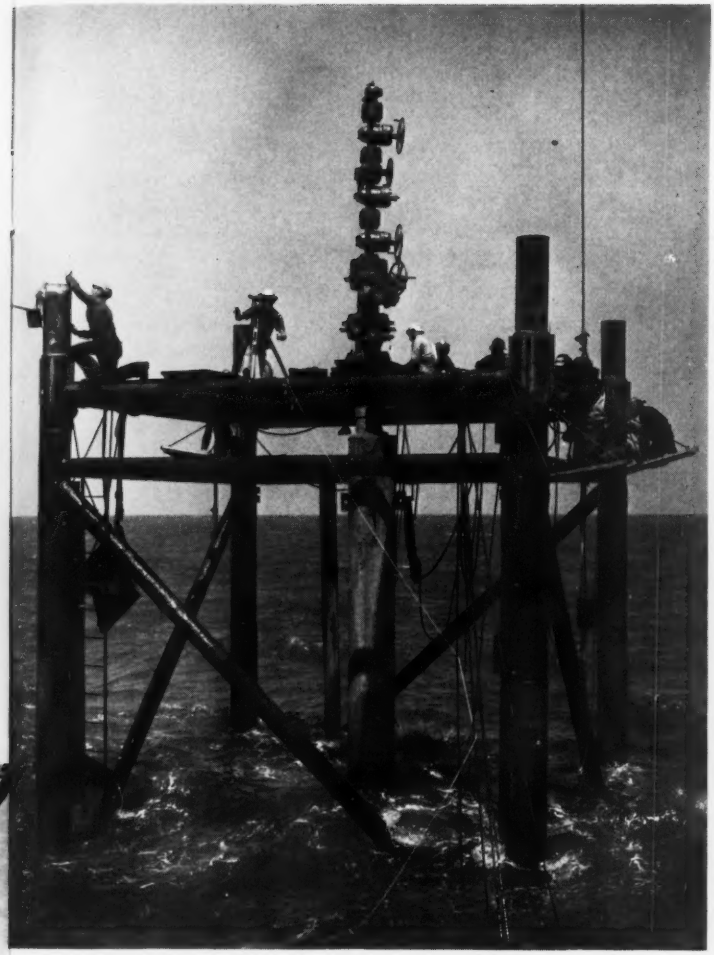
Exposed wellhead extends 19 feet above sea level. The problem is to protect the well and provide platform for future servicing and workover. The other exposed casing is fresh water well.

Lowering template base over well, crew uses huge derrick-barge mounted crane as crew member (right) signals directions to crane operator. Horizontal braces made it necessary to ease steel structure over Christmas tree with crossbar between the two wells. Base settled easily in mud of Gulf.



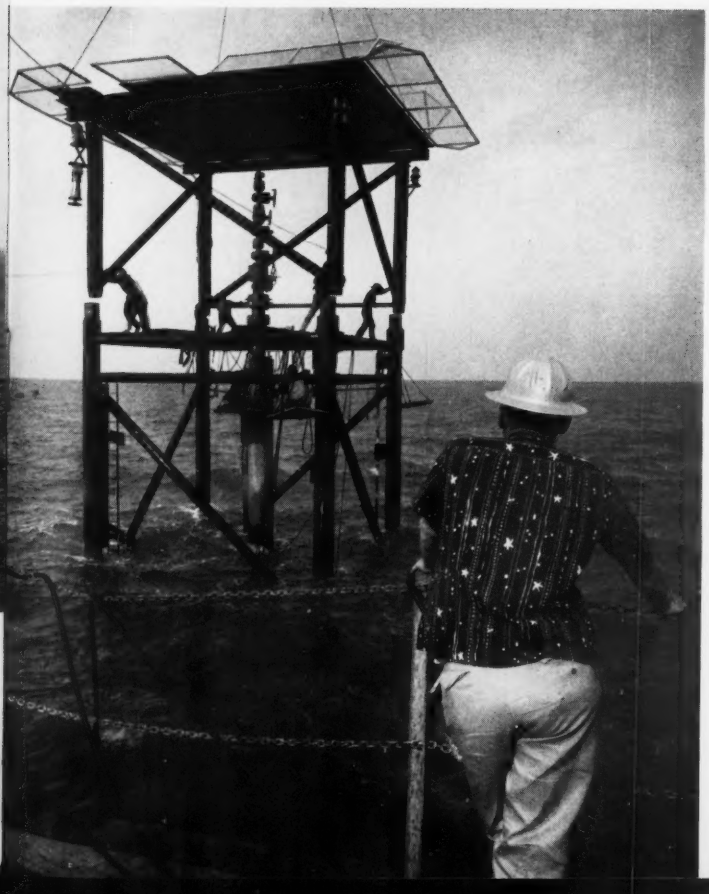


Driving pilings, steam hammer, guided by lead, finishes spiking two 214-foot pilings into the Gulf's floor and moves on to the other pilings. Four-legged template base served as guide for piles which anchored wellguard. Hammer was also used to set base in several feet of mud before pilings were driven.



Leveling piles, Humble engineer sights through transit as crew member marks just where it should be cut off with acetylene torch. Other crew members continue to weld braces and joints in steel structure and set the floor grating which will support workover crews and equipment. Meanwhile, on board the DB-1, platform gets a final paint job.

Hoisting upper platform into place, crane lowers it toward anchored template base. Men on template stand by to adjust four legs of platform on leveled pilings, while crew member directs crane operator. When a crossbar interfered with one of the legs' fitting, welding torches quickly cut it loose. It was re-welded after the helicopter platform was secured on top of the pilings.



Finishing touches are put on as wellguard takes shape. Engineer looks over late afternoon job, as welders prepare for another night's work. Final work included installation of rail guards, grating floor, ladders and equipment and took almost as long as setting the template. The Christmas tree was given a coat of special paint to prevent rust and corrosion. Entire job took about 36 hours after rig was pulled off well.

Outboard racing craze is just one reflection of Texas boating boom. On just about every navigable body of water from the Gulf to tiny ponds, Texans are having a whale of a lot of fun in pleasure craft that can be tucked away in the backyard or rolled into the garage.

In Texas, boating is bustin' out all over. And many a Texan has set aside his Stetson for a natty yachting cap. He's found that

IT'S NICE TO BE NAUTICAL

IF King Neptune, that bearded old landlord of the deep, has any ideas about rising unexpectedly from Texas waters, he'd do well to pick the spot with care. With the current boating craze, he likely would be run down—or at least jostled loose from his spangled crown and three-pronged spear.

Boating indeed is bustin' out all over. Up and down 624 miles of Gulf coast line, fleets of sailboats swarm like white butterflies. On 514 lakes and reservoirs, and numberless streams, armadas of powerboats chug merrily to and fro. Texas highways and byways are speckled with boat trailers, trundling for the nearest patch of water. And in shipyards and backyards, Texans in bathing suits and paint-splotched dungarees are scraping, sanding, painting, and generally pampering everything from air-conditioned yachts to leaky little tubs powered by "coffee grinders."

The U. S. Coast Guard, which is patrolling more regattas and boat races than ever before, last year had registered 15,000 boats in Texas. But this figure includes only craft 16 and more feet in length which operate in navigable waters. Countless smaller vessels probably would run the total to 200,000.

In this, Texas merely reflects a national trend that has made boating the most popular sport. One in every six Americans has a stake in pleasure boating. Thirty million ex-landlubbers —equal to the total participants in golf, tennis, and bowling—are getting their sea legs in six million craft this year. What you'll see at Galveston or Corpus Christi or Lake Texoma is happening on the Great Lakes, Chesapeake Bay, Long Island and Puget Sounds—anywhere, in fact, there's water deep enough to float a boat.

The boating boom mirrors more income and leisure time, and a fervent new worship of the out-of-doors. Too, the range of boats—from $39 do-it-yourself kits to $130,000 used yachts—is getting faster, cheaper, safer, and (for the ladies) prettier. Some boat makers claim that the boat trailer almost single-handedly has shattered the old concept

of boating being a rich man's sport.

Related water sports have gained friends, too. More than ever, folks are fishing and swimming; and specialties like skin diving, spear fishing, water skiing, and surf boarding have flourished. Says one oldtime boating fan who still rows his own, "They go *under* the water. They go *on* it. And now with these new ski kites, they're flyin' *over* it. I figure they've gone about as far as they can go. But I don't know."

What's boating got? Freedom, for one thing. Unlike the freeways (and the fairways, too), the waterways still offer plenty of elbow room. In Texas, the year-round boating season provides an escape hatch from the complex shore life into the best of all possible worlds—where Texans get sun-soaked, spray-drenched, and happily exhausted.

Part of its charm lies in the lure it holds for the whole family. Dad spends hours dreaming up an affectionate name for the hull. Mother takes Baby along rather than miss a Sunday afternoon spin; even family pets get in the act. And Junior haggles for the family boat just as he once did for the family car. Where there's a one-car garage, the automobile sits in the weather; the boat sits in.

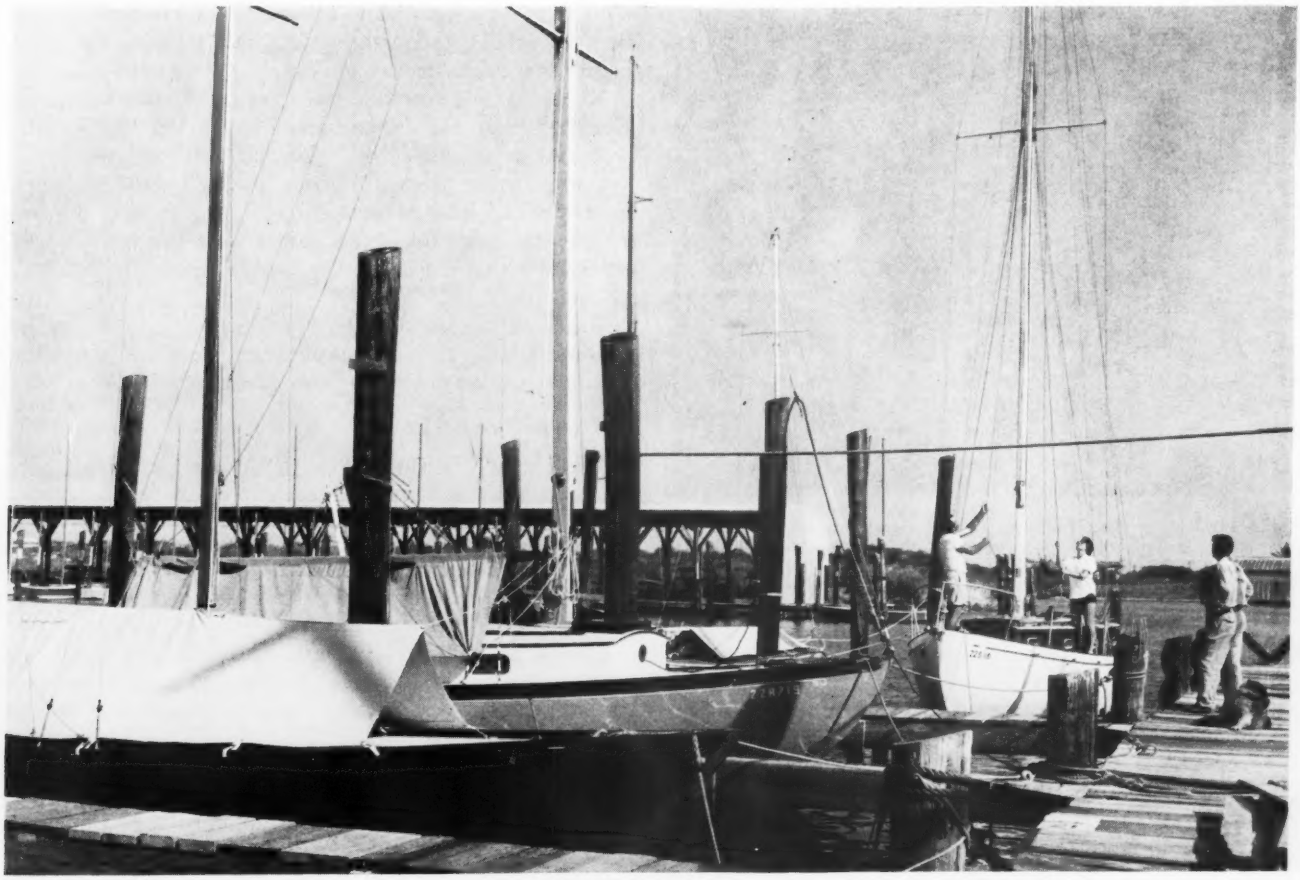
How most Texans feel about boating is summed up neatly in Kenneth Grahame's classic book for children, *The Wind in The Willows*. Adrift one day, the Water Rat muses to the Mole: "Believe me, my young friend, there is *nothing*—absolutely nothing—half so much worth doing as messing about in boats." With that, Water Rat plowed majestically into a mud bank.

Boat lovers, many of whom have run aground themselves, fall into two categories—sailboaters and powerboaters. There's a friendly rivalry between the two. In the majority is the power man, who likes nothing better than a windless day: this makes for a smooth ride and the possibility of twitting a sailboater with "What's the matter, sailor? No wind?" before tugging him into dock. The sail man wouldn't trade an afternoon in a spanking breeze for a whole month of powerboating. On sighting a stalled "stinkpot," he gleefully calls "get a horse!"

For those as enterprising as Noah, there's the house boat. With these, home is where you hang your outboard, and everyone's carefree as Huck Finn.

With almost 4,000 miles of inland water surface, Texas ranks third among the states. Still, there are vast arid regions where boating fans drive hours to reach launching spots. This fact gave rise to a story which illustrates the surge to fun afloat. A tourist stopped at a West Texas service station after crossing 200 miles of the driest country he'd ever seen. Amazed by two boat trailers on the driveway, he asked what in the world those boats were doing way out here.

"Neighbor," the attendant said as he polished a boat windshield, "we've got three man-made lakes only a half a day away. This is just about the boat-happiest desert you ever saw. Why, just the other day, we lost a sailor in a sandstorm."



Fleets of sailboats sit snugly in yacht basins along the Texas Gulf Coast when not in use. To many families, sailing has become a way of life.

Educators Appraise Humble's Operations

Top flight educators from 15 of the nation's leading universities and colleges, who worked for Humble Oil & Refining Company during the summer months, met August 26 and 27 in Houston to appraise the Company's operations.

The 25 professors who participated in the unusual and informal critique had been working for the Company in the Houston area on special projects related to their particular fields. Nineteen other professors were working in areas too distant to enable them to attend the meeting.

C. E. Reistle, Jr., executive vice president, told the professors that Humble's management was interested in learning the professors' personal reactions to their summer's work and their opinions of various Company policies.

The educators met August 26 to discuss their experiences and impressions with each other. August 27 they conferred with 36 members of Humble's management, including board members, division managers, field superintendents, and plant managers, about the matters they discussed in the first session. The professors elected a chairman and individual spokesmen from their group to present the group's reactions.

Opinions expressed by the professors gave Humble's management an "outsider's" view of almost every phase of the Company's operations.

One or more of the educators worked in the following departments: exploration, production, refining, sales, controller's, law, economics and statistics, employee relations, and advertising and public relations.

Linihan Awarded President's Medal

John Linihan, center, Hobbs district electrical foreman, is awarded the National Safety Council's President's Medal for life saving at a ceremony in Hobbs, New Mexico, on September 12. Humble president Morgan J. Davis, right, made the presentation. At left is Clayton Hughes, Hobbs farmer, whose life Linihan saved by administering artificial respiration after Hughes had suffered severe electrical shock.

Humble Football Coverage Sets Record This Fall

Scheduled this fall by Humble Oil & Refining Company is the most comprehensive radio and television coverage of southwestern football since the Company first began sponsoring broadcasts of Southwest Conference games in 1934.

Included in this year's coverage are regional telecasts of three Southwest Conference games over a network of 24 TV stations, and radio broadcasts of 71 games. More than 120 radio stations are being used to bring the game broadcasts to all parts of Texas.

Kern Tips will do the play-by-play for Humble's three regional telecasts. He will be backed up by Alec Chesser who will describe interesting sidelights and halftime activities.

Games to be telecast regionally are Texas-Oklahoma, October 12; Rice-Arkansas, November 9; and Baylor-SMU, November 23. These games were selected for telecasting by the Southwest Conference under the NCAA's policy.

Radio broadcasts will be brought to Texas homes by Humble from such places as Berkeley, California; Atlanta, Georgia; Columbus, Ohio; and Memphis, Tennessee.

Assistant Wholesale Sales Managers Named

Two new assistant managers of Wholesale Sales have been named by Humble Oil & Refining Company.

O. D. Bridges, with Humble since 1946 and formerly manager of Special Products Manufacturing division, will have the specific responsibility for developing wholesale sales.

George H. Shipley, formerly chemical products coordinator in Humble's Refining Department, will coordinate the activities of the Special Products Manufacturing and Fuel Oil Terminal division. He also will be in charge of the Sales Technical Service group and will handle petrochemical sales.

Also moving up in this reorganization is H. L. Crawford, who became general superintendent of the Special Products Manufacturing Plant and Fuel Oil Terminals. He was formerly chief chemist at the plant.

Brown Honored by Petroleum Engineers

A technical report by William O. Brown, Humble research engineer at the Houston Research Center, has been selected by the Society of Petroleum Engineers as the best technical paper of the year written by a junior member of the organization.

Mr. Brown was awarded the Cedric K. Ferguson Medal for his achievement at the fall meeting of the S.P.E., a branch of the American Institute of Mining, Metallurgical and Petroleum Engineers.

The paper which the 26-year-old engineer authored is a report on a laboratory investigation of the mobility of connate water during the water flooding of an oil well.

Garrison New Assistant Chief Scout

W. J. Garrison, chief scout for Humble's Western Division with headquarters in Midland, has been transferred to the Houston Office and promoted to assistant chief scout for all of the Company's exploration operations.

Replacing Mr. Garrison as Western Division chief scout is F. H. McMahon, Southwest Texas Division scout with headquarters in Corpus Christi.

John Reeder, California Area scout, replaces Mr. McMahon in Corpus Christi and Pete Smith, assistant division scout at Midland, replaces Mr. Reeder in California.

40 Years With Humble

Neal Reavis, farm boss at Goose Creek, completed 40 years of service with Humble on September 14.

Deaths

Employees: William J. Acker, 39, lease pumper-gauger at McCamey, on August 5; William H. Arnold, 52, toolpusher at North Crowley, on July 9; Elton Brent, 46, helper at Baytown Refinery, on August 26; Thomas M. Crawford, 64, senior landman at Tallahassee, Florida, on June 29; Wiley R. Cunningham, 53, lease pumper-gauger at Means on July 30; Clarence V. Dorsett, Jr., 33, transport operator at North Texas Terminal, on June 28; Horace S. Ferrill, 36, operator helper special at Baytown Refinery, on August 22.

William W. Holland, 61, toolpusher at Winters, on August 25; Arthur W. Howe, 53, lease pumper-gauger at Willamar, on August 9; John Kader, 38, district salesman in the Southeast Texas Division office, on June 26; William H. Lambeth, 57, senior scout in Southwest Texas, July 17; Jerry Lewis, 48, roustabout at Friendswood, on September 2; Charles M. Lind, 45, subsurface geologist in Southwest Texas, on August 8.

William E. Neely, 59, oiler at Crane Station, on September 6; Barney D. Roden, 58, maintenance man at Baytown Refinery, on August 20; Carlie D. Simmons, 56, operator at Baytown Refinery, on July 8; Toliver E. Smith, 54, witness gauger at London District, on July 15; Luther H. Tarver, 54, truck driver at Longview, on August 29.

Annuitants: William W. Adams, 77, former helper at Baytown Refinery, on September 4; Nathan "A." Arnold, 82, former watchman at Baytown Refinery, on September 1; Raymon R. Cox, 62, former toolpusher at Raccoon Bend, on August 10; Willy "Y" Jones, 66, former lease pumper-gauger at Pickton District, on September 8.

Christian R. Krenek, 57, former helper at Baytown Refinery, on June 26; George P. Martin, 67, former department head of PL-Oil Accounting in the Houston Office, on July 2; Walter A. Smith, Sr., 63, former operator at Baytown Refinery, on August 18; William A. Smith, 82, former price clerk in Storehouse Accounting in the Houston Office, on August 5.

Recent Retirements

HUMBLE PIPE LINE COMPANY

Name	Location	Date of Retirement	Years of Service
Horace A. Bullock	Pampa District	June 1	31
Florian Gerbig	Harbor Island	August 30	37
Dewey S. Hines	Tomball	July 6	22
Louis Monteau	Pierce Junction	September 9	35
Lyndel J. Rambo	Ector Station	July 1	29
Monroe W. Rhodes, Sr.	Longview	August 24	31
Galileo Richardson	Hawley Station	September 1	25
Ulysses S. Strickland	Odessa	August 16	32
Berry B. Thorn	Tomball	September 26	37

PRODUCTION DEPARTMENT

Homer W. Arnold	Grand Isle	August 7	30
William H. Baldwin	Heyser Gas Plant	September 1	30
Olin A. Griffin	Southwest Texas	August 16	34
James O. Jordan	Friendswood	July 20	27
Lawrence S. Kingsbury	Avoca	August 17	35
Sidney Martin	Raccoon Bend	September 1	37
Newbern G. Miller	Tomball	September 2	36
Sidney E. Miller	Paradis	August 1	25
William H. Mitchell	Tomball	September 19	32
Stanford W. Oberg	Civil Engineering Houston	September 24	37
Chester C. Reed	Avoca	September 23	38
James M. Yowell	London	September 8	35

BAYTOWN REFINERY

Luther T. Caudle	Butadiene Plant No. 42	September 5	29
John J. Compton	Cracking Coils	August 16	31
David L. DeWitt	Gauging & Pumping	July 29	35
Jim V. Hill	Boilermaker Dept.	August 5	32
Nathanel P. Jenkins	Labor Dept.	August 9	34
Walton B. Killough	Engineering	September 1	41
Willie B. New	Rigging Dept.	September 26	36
Elton G. Oliver	Railroad Dept.	August 1	20
Robert E. Overand	Dock Department	September 1	28
Walter C. Pond	Machinist Dept.	September 3	34
Miner Provost	Labor Dept.	September 1	20
Grover A. Reeves	Power Water System	June 15	34
John J. Riley	Mechanical Dept.	July 16	31
Ralph Sheeley	Utilities	July 22	27
Pat H. Stovall	Pumping & Gauging	August 8	35
Baz E. Sutphin	Pipe Department	September 5	32

SALES DEPARTMENT

Henry I. Johnson	Southeast Tex. Div. Office in Houston	September 25	23
Henry A. Lillja	Southwest Division	July 25	44
John M. Oates	Northeast Tex. Div. Office	September 24	24
Clyde Williams	Houston Products Terminal	August 1	37

HOUSTON OFFICE

James E. Armstrong	PL-Right-of-Way	July 14	29
Emily J. Brinsdon	Office Buildings	September 15	22
Charles A. Hardy	Crude Oil Acctg.	July 29	27
Eleanora Hunsaker	Prod. & Expl. Acctg.	August 18	35
Alan D. Hunter	Exploration	June 1	33
Orville Q. Lomax	PL-President	October 1	34
Walter L. Whisenhant	Prod. Acctg.	June 18	38
Horace C. Wilson, Sr.	Crude Oil Dispatching	September 3	22

By the way

● Men on the Alaskan project (pages 2-6) face two problems with teeth in them: the weather and big Kodiak bears.

At this time of the year the weather occupies the No. 1 spot. The Kanatak area is in Alaska's "Banana Belt," but this area's reputed "temperate" climate differs somewhat from what Texans consider temperate. Frequent rains and almost constant high winds make rain gear standard wearing apparel. Light rain often comes horizontally, driven by strong gusty winds, and soon this flying mist will turn to snow.

One crew member, a self appointed weather expert after a week on the ground, observed: "Up here we have only three seasons, July, August, and Winter."

● As for problem No. 2, the drilling crew members hope that the Kodiak bears, one of several groups of native "sidewalk engineers," will keep their distance.

Some big game hunters would give anything for a shot at one of the massive bears that inhabit the area. Tom Nowlin, staff photographer who recorded the Alaska operation from its very beginning to the spudding in of the well, shot a dozen or so of the beasts. But he shot them only with cameras—and from the safety of a hovering helicopter (see below).

Some people say the bears won't attack a man under normal conditions, but the crewmen are not sure the bears know that. So they take no chances.

Helicopter view of Kodiak bear.

● Artist Stan Farnham, a Maine "Down-Easter" turned Texan, had heard that Gulf Coast weather was unpredictable. On location to paint the front cover for this issue, he found, to his frustration, that it can also be sulky and uncooperative.

As his boat bobbed gently beside racing craft in Corpus Christi Bay, Stan checked his camera and put his sketchpad at the ready. But minutes before the starter's gun could boom, what had been a promising breeze faded to feathery wisps, then died. Stan and the others were left, like the Ancient Mariner, "as idle as a painted ship upon a painted ocean."

As a last resort, those fair winds filling sails and whipping up whitecaps on our cover had to be drawn mostly from memory of breezier days on Long Island Sound and points East. Luckily for us, Stan could rely on the blue-water days of his youth to catch the grace and beauty of a trim craft in a spanking breeze. It gives some of us just a touch of sea-fever.

● Summer sun sent the mercury soaring to a blistering 100 degrees as Joe Tucker plodded around Baytown Refinery's Paraxylene Unit on the track of his petrochemicals story (see pages 10-14). When a helpful operator fished out a scoopful of white, icy-looking crystals destined to become Dacron fabric, our slightly wilted writer perked up. "It looks good enough for snow cones!" he joked.

In the language of today's teenager, Tucker had a real cool point. That cupful of snow he eyed so hopefully came from equipment that works much like a king-sized ice cream freezer. Its ancestor, in fact, is just that—an old fashioned hand-crank model used by Baytown researchers in experiments to freeze paraxylene away from its family circle of other xylenes. You might say they started with confections and came up with clothes.

The Humble Way

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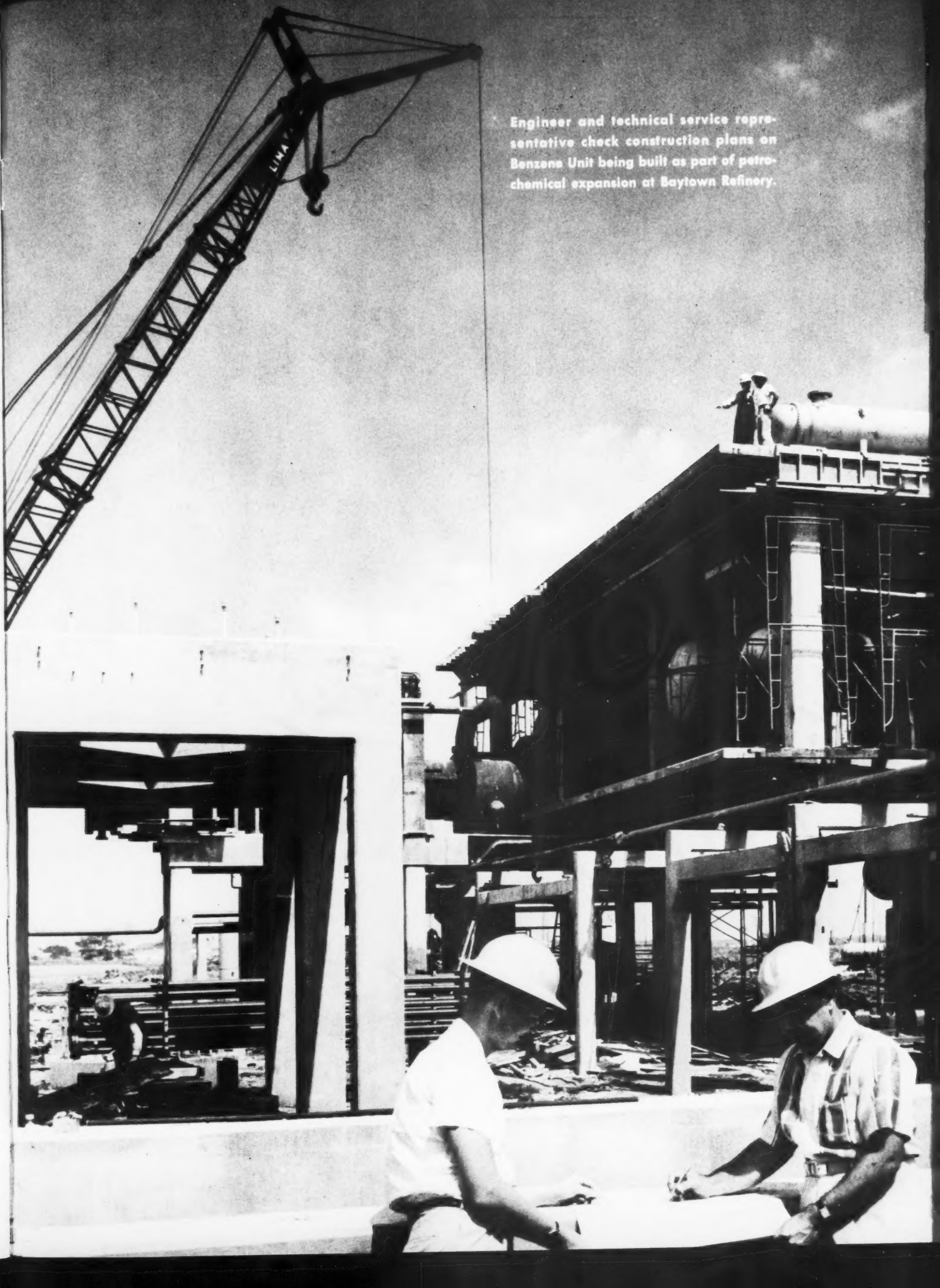
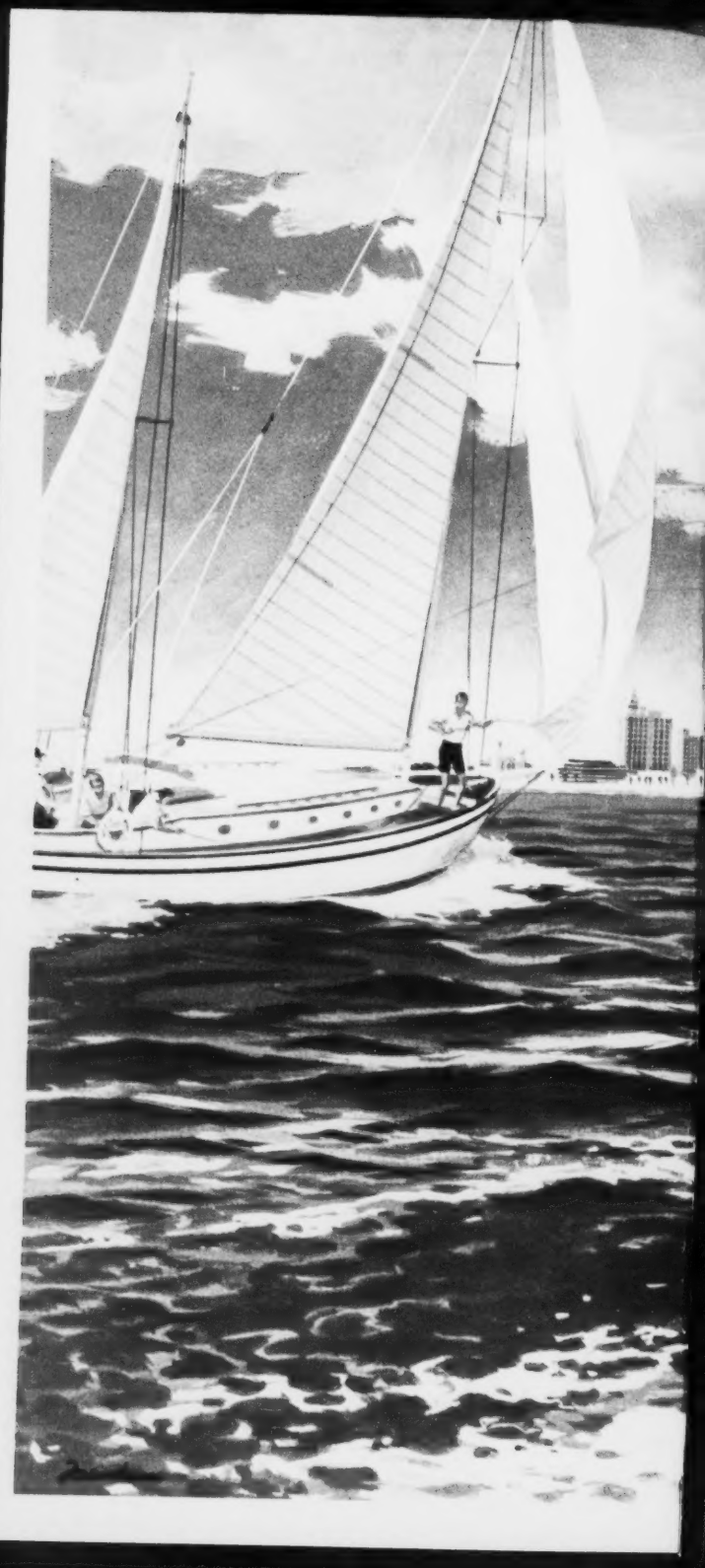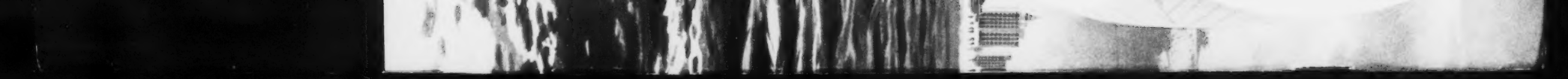
Engineer and technical service representative check construction plans on Benzene Unit being built as part of petrochemical expansion at Baytown Refinery.